

Obstetrics Pain Management

Infosheet – Prevention of Persistent Pain with CSE Analgesia

Combined Spinal Epidural (CSE) analgesia provides rapid and reliable labor analgesia and may reduce the risk of persistent postpartum pain.

Incomplete Pain Relief During Labor

Labor pain is among the most intense pain experiences, making satisfactory analgesia a fundamental human right as emphasized by the World Health Organization (WHO) [1]. Epidural analgesia is considered the gold standard for intrapartum pain relief and is applied in up to 64% of women in high-income countries, with its use continuing to rise [2]. However, labor epidural analgesia does not always succeed with reported overall failure rates of about 14% [3]. A common failure mode is the unilateral block, where one side of the body receives insufficient analgesia, occurring in 5–8% of cases. Its cause is typically attributed to either an anatomical barrier restricting the free flow of local anesthetic or suboptimal positioning of the catheter tip [4]. Inadequate analgesia is clinically relevant not only intrapartum but also for longer-term outcomes, as uncontrolled acute pain is a recognized risk factor for persistent pain [5].

Women with severe acute postpartum pain had a 2.5-fold increased risk of persistent pain [7].

Pain as a Risk Factor

The relationship between acute pain severity and long-term outcomes is well established in pain medicine [6,7]. The strongest predictors of chronic postsurgical pain (CPSP) are pre-existing chronic pain and the severity of acute postoperative pain [5]. Persistent postpartum pain may have severe impact. Women with severe acute postpartum pain had a 2.5-fold increased risk of persistent pain compared to those with only moderate pain. A one-point increase in acute pain score following delivery corresponds to an 8.3% increase in depressive symptoms at 8 weeks and a 12.7% greater likelihood of

ongoing pain 8 weeks later [7]. The mode of delivery – whether vaginal or cesarean – does not determine a mother's risk for developing persistent pain [7].

Persistent postpartum pain carries functional consequences that affect daily life and maternal wellbeing: impaired mobility, disrupted sleep, reduced capacity to care for the newborn, even an increased risk of postpartum depression – pain and depressive symptoms can reinforce one another over time [7]. Adequate pain management therefore has benefits beyond immediate comfort – it helps prevent CPSP.

Compared to traditional epidural analgesia CSE had 42% reduced rate of epidural catheter failures [11].

CSE Analgesia for Improved Reliability and Fewer Failures

Combined spinal epidural (CSE) is an established alternative to conventional epidural analgesia and provides a more consistent onset of neuraxial block. The onset of analgesia occurs much faster, typically within 2–10 minutes, compared to 15–20 minutes with conventional epidural. CSE also provides more uniform sensory blockade and enhanced coverage of the sacral dermatomes, reducing the frequency of breakthrough pain [9]. With CSE, 25% less local anesthetic is required, and motor block is reduced, especially in prolonged labors [10]. By confirming midline needle placement through visualization of cerebrospinal fluid, CSE improves catheter positioning accuracy, reducing the risk of unilateral block [8,9]. Overall catheter failure rates are significantly lower compared to conventional epidural analgesia. Importantly, failed catheters are identified at least as promptly, allowing timely intervention without delay

[11]. The risk for post-dural puncture headache (PDPH) was not increased in CSE versus conventional epidural analgesia. Literature also describes the use of CSE in high-risk patients undergoing obstetric, geriatric, and neonatal surgery, and patients undergoing cesarean section who suffer from severe co-morbidities such as osteogenesis imperfecta, thoracic scoliosis, cardiomyopathy etc. [10].

By reducing the likelihood of inadequate analgesia during labor, CSE targets a modifiable point in the pathway from acute pain to persistent pain – offering clinical teams a supported strategy for protecting long-term maternal health.

Effective labor analgesia is clinically relevant beyond the intrapartum period. Reducing acute postpartum pain lowers the risk of persistent pain and associated functional consequences, including impaired capacity to care for a newborn and even postpartum depression.

By improving placement reliability, reducing both unilateral block and overall catheter failure rates, and allowing prompt recognition of complications, CSE offers women comfort with benefits that extend from the delivery room into the weeks and months that follow.

References:

1. World Health Organization. Intrapartum care for a positive childbirth experience. <http://www.who.int/reproductivehealth/publications/intrapartum-care-guide-lines/en/>; 2018. ISBN: 978-92-4-155021-5
2. Halliday L, Kinsella M, Shaw M, Cheyne J, Nelson SM, Kearns RJ. Comparison of ultra-low, low and high concentration local anaesthetic for labour epidural analgesia: a systematic review and network meta-analysis. *Anaesthesia*. 2022 Aug;77(8):910-918. doi: 10.1111/anae.15756. Epub 2022 May 24. PMID: 35607864; PMCID: PMC9543867.
3. Pan PH, Bogard TD, Owen MD. Incidence and characteristics of failures in obstetric neuraxial analgesia and anesthesia: a retrospective analysis of 19,259 deliveries. *Int J Obstet Anesth*. 2004 Oct;13(4):227-33. doi: 10.1016/j.ijoa.2004.04.008. PMID: 15477051.
4. Brogly N, Valbuena Gómez I, Afshari A, Ekelund K, Kranke P, Weiniger CF, Lucas N, Dewandre PY, Guasch Arevalo E, Ioscovich A, Kollmann A, Lindelof K, Orbach-Zinger S, Reis S, van den Bosch O, Van de Velde M, Romero CS. ESAIC focused guidelines for the management of the failing epidural during labour epidural analgesia. *Eur J Anaesthesiol*. 2025 Feb 1;42(2):96-112. doi: 10.1097/EJA.0000000000002108. Epub 2025 Jan 2. PMID: 39744744.
5. Schug SA, Bruce J. Risk stratification for the development of chronic postsurgical pain. *Pain Rep*. 2017 Dec 12;2(6):e627
6. Kehlet H, Jensen TS, Woolf CJ. Persistent postsurgical pain: risk factors and prevention. *Lancet*. 2006 May 13;367(9522):1618-25. doi: 10.1016/S0140-6736(06)68700-X. PMID: 16698416.
7. Eisenach JC, Pan PH, Smiley R, Lavand'homme P, Landau R, Houle TT. Severity of acute pain after childbirth, but not type of delivery, predicts persistent pain and postpartum depression. *Pain*. 2008 Nov 15;140(1):87-94
8. Heesen M, Van de Velde M, Klöhr S, Lehberger J, Rossaint R, Straube S. Meta-analysis of the success of block following combined spinal-epidural vs epidural analgesia during labour. *Anaesthesia*. 2014 Jan;69(1):64-71. doi: 10.1111/anae.12456. Epub 2013 Oct 28. PMID: 24164577.
9. Vanderheeren MC, Van de Velde M, Roofthoof E. Initiation and maintenance of neuraxial labour analgesia: A narrative review. *Best Pract Res Clin Anaesthesiol*. 2024 Sep;38(3):168-175. doi: 10.1016/j.bpa.2024.10.005. Epub 2024 Oct 14. PMID: 39764807.
10. Roofthoof E, Rawal N, Van de Velde M. Current status of the combined spinal-epidural technique in obstetrics and surgery. *Best Pract Res Clin Anaesthesiol*. 2023 Jun;37(2):189-198. doi: 10.1016/j.bpa.2023.04.004. Epub 2023 Apr 15. PMID: 37321766.
11. Booth JM, Pan JC, Ross VH, Russell GB, Harris LC, Pan PH. Combined Spinal Epidural Technique for Labor Analgesia Does Not Delay Recognition of Epidural Catheter Failures: A Single-center Retrospective Cohort Survival Analysis. *Anesthesiology*. 2016 Sep;125(3):516-24. doi: 10.1097/ALN.0000000000001222. PMID: 27380107.